The Status of Tuberculosis Prevention and Control Measures in Large City and County Jails in the United States

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Executive Summary: Key Findings and Recommendations

Three Key Recommendations

1) Improving TB prevention and control requires that jails and local public health departments **increase their direct collaboration**. Organizational mechanisms that are associated with increased collaboration include
   - having **designated liaisons** between the agencies for TB control,
   - holding **regular meetings of management and line staff**, and
   - having **health department TB program staff perform on-site services** at jails.

2) Monitoring patient management and evaluating TB control activities necessitates that jails develop **electronic information systems** that have easily retrievable patient information and aggregate data on key TB measures, including skin test positivity rates.

3) Effective TB prevention and control necessitates that jails and health departments actively **evaluate TB screening, containment, and discharge planning practices** in order to identify successes and address deficiencies.

The share of U.S. tuberculosis (TB) cases occurring among inmates in jail facilities is disproportionately high.[1] Structural factors in most jails, such as overcrowding and poor ventilation, combined with inmates' heightened risk for TB, make jails a particularly high-risk environment for the transmission of TB. At the same time, the rapid movement of inmates into and out of jails makes it difficult for many inmates to complete any TB treatment that is started in jail. As a result, effective TB prevention and control measures in jails are needed to reduce TB rates among inmates as well as in the general U.S. population.[2]

In 1999, the Centers for Disease Control and Prevention (CDC) initiated a study to assess the extent to which jails have implemented CDC's 1996 recommendations for TB prevention and control in correctional facilities, to assess the extent of collaboration between jail systems and public health departments, and to identify barriers to collaboration.

The study focused on jurisdictions having large city and county jail systems—i.e., those with average daily populations of at least 1,500—and having general community TB case rates at or above the national average (6.8/100,000). Forty-six jurisdictions met these criteria. Twenty jurisdictions were randomly selected from these 46, proportional to the regional distribution. After review by the CDC Institutional Review Board, data were collected from September 2000 to September 2001 through the following methods:

[1] Hutton MD, Cauthen GM, Bloch AB. Results of a 29-state survey of tuberculosis in nursing homes and correctional facilities. Public Health Reports 1993;108:305-314.

[2] CDC. Prevention and control of tuberculosis in correctional facilities: recommendations of the Advisory Council for the Elimination of Tuberculosis. MMWR 1996;45 (No. RR-8).

(1) questionnaires mailed to jail system medical directors and health department TB control directors;

(2) on-site surveys and observation in each of the 20 jurisdictions; and

(3) abstraction of a sample of medical records of inmates with TB disease and latent TB infection (LTBI).

Below are the key findings and recommendations of the study, focusing on priority areas for improving TB control in the nation's jails. City and county jail systems face difficult choices regarding how to allocate scarce resources in order to implement these recommendations. However, as the jails' partners in TB control, public health departments can help jail systems increase the effectiveness and efficiency of their TB prevention and control efforts.

Strengthen TB Information Systems and Program Assessment

In general, most of the jail systems in the study had inadequate medical information systems, which are essential for case management and program assessment. In addition, most jail systems conducted only limited assessments of the effectiveness of their TB control efforts.

Specific Recommendations

- **Improve the completeness of medical records data.** Of the medical records examined for inmates evaluated for TB disease, only a quarter contained complete documentation of pertinent clinical procedures, results, and dates for TB screening, diagnosis, and treatment. This information is necessary both for individual case management and overall program management and assessment.
- **Develop aggregate record-keeping systems for TB-related data.** Over one third of the jail systems did not have any aggregate record-keeping systems (paper-based or electronic) for tracking inmates and assessing their TB treatment status. Only 15 percent had electronic record-keeping systems. The resulting data limitations hampered TB program monitoring and assessment.
- **Conduct periodic review of TB trend data and chest radiograph results.** Half of the jail systems reported monitoring trends in inmates' tuberculin skin test (TST) results and the proportion that have a positive test. Periodic review of skin-test result data is important to determine how widespread LTBI is in the inmate population, to monitor TB risk, and to follow trends over time.
- **Implement TB program quality improvement procedures.** Less than one third of the jail systems conducted periodic assessments of their TB prevention and control programs through records review. Review of records of inmates with TB disease and infection can highlight operational barriers to TB control efforts and is important for assessing the adequacy of TB policies and procedures.

Strengthen TB Environmental Controls and Isolation Practices

The study found that environmental controls in prescreening areas were a weak component of most of the jail systems' TB control efforts and that delays were common in isolation of inmates suspected of having TB.

Environmental Controls in High-Risk Prescreening Areas
In 80 percent of the jail systems surveyed, the air from the intake and booking areas was recirculated to other parts of the facility. The reported average time from admission to symptom screening was close to 3 hours, but the time could extend up to 24 hours. In this length of time, other inmates and staff may be exposed to contaminated air.

Specific Recommendations

- Evaluate and modify, if necessary, ventilation and filtration systems to strengthen TB environmental control in prescreening areas.

Immediately Isolate Inmates Who Have or Are Suspected of Having TB
Good infection control measures suggest erring on the side of caution and promptly isolating inmates with TB symptoms or abnormal chest radiographs until TB is ruled out. Although most of the jail systems had adequate policies requiring the initiation of isolation, review of medical records of inmates who were evaluated for TB disease showed that at least 14 percent had probable or definite cause for isolation but were not isolated. Furthermore, delays in isolation of at least a day occurred for 44 percent of patients with symptoms or abnormal chest radiographs.

Specific Recommendation

- To ensure good infection control by immediately isolating these inmates, jail systems and local health department TB programs should collaboratively evaluate how long it takes from first report of TB symptoms or abnormal chest radiograph to inmate isolation, and strengthen procedures and policies accordingly.

Improve the Use and Monitoring of Airborne Infection Isolation Rooms
Nearly one third of surveyed jail systems reported at least sometimes holding inmates with suspected or confirmed TB in rooms lacking negative pressure or any other environmental controls. This was a particular problem for jail systems with no on-site airborne infection isolation rooms (40 percent of the study sample). Jail systems that have airborne infection isolation rooms need to strengthen protocols for monitoring negative pressure. Most of the jails with electronic monitors did not verify negative pressure manually with smoke tube tests.

Specific Recommendations

- Jail systems lacking airborne infection isolation rooms need to promptly send inmates with suspected TB to hospital airborne infection isolation rooms. Jail systems regularly housing inmates at high risk for TB can also consider installing other environmental controls (e.g., HEPA filters, UVGI lighting) in an isolation room where such inmates can be held while awaiting transport to a hospital airborne infection isolation room.

- Jail systems with on-site airborne infection isolation rooms should verify negative pressure daily when in use, using a smoke tube test.

Provide More Comprehensive and Timely Screening and Diagnostic Evaluations

Although most jail systems had adequate policies for TB screening, most still need to strengthen their screening practices. First, there was a lack of information in the medical records about TB history and risk factors, including HIV status. Second, at least one quarter of the jail systems did not have policies requiring chest radiographs for all known HIV-positive inmates. Third, the study found routine lengthy delays in obtaining chest radiograph results for inmates who were symptomatic, skin test positive, or HIV positive. In the intervening time, potentially contagious inmates were housed with the general population.

In terms of diagnostic practices, TB symptoms and abnormal chest radiographs did not always trigger an evaluation for TB. According to medical records reviewed, several cases of active TB were initially misdiagnosed or missed.

Specific Recommendations

- Screen inmates for TB symptoms in a timely manner after entry and ask about key symptoms, such as persistent cough.
- Systematically gather data about TB risk factors during the initial medical screening and evaluation.
- Routinely administer chest radiographs to all known HIV-positive inmates and to inmates who are at risk for HIV but whose status is unknown.
- Periodically assess the timeliness of chest radiograph results so that jail medical staff have a chest radiograph interpretation within 24 hours of symptoms and within 72 hours of a positive skin-test result.

Develop and Strengthen Contact Investigation Protocols

Ninety-five percent of surveyed jail systems reported that they conduct contact investigations when inmates are diagnosed with or suspected of having infectious TB disease. However, only about one third of jail systems had written protocols for conducting contact investigations. Furthermore, 40 percent of the jail systems took at least a month to conduct the contact investigation at the jail, by which time a large percentage of inmates would have been released to the community.

Specific Recommendations

- Increase collaboration with the health department in developing written policies and protocols for contact investigations and in conducting them.
- Implement investigations sooner—within days.
- Initiate contact investigations for smear-positive patients and patients with abnormal radiographs suggestive of TB, rather than waiting until TB is culture confirmed.

Increase HIV Counseling and Testing

Because coinfection with HIV is the greatest risk factor for progressing from latent to active TB, and jail inmates tend to have relatively high rates of HIV infection, the risk of TB transmission in a jail setting is especially high. All but two jail systems had a policy of offering HIV testing to all inmates diagnosed with TB disease; however, less than half had policies of offering HIV testing to patients who have positive TST results. In the medical records examined, nearly 20 percent of inmates evaluated for TB disease were reported to be HIV positive; however, HIV status information was lacking in nearly one third of the records.

Specific Recommendation

- Encourage HIV counseling and testing among inmates with TB disease and LTBI and among inmates at risk for HIV.

Increase Staff Training

Although most jail systems provided some staff training on TB, half reported gaps in training.

Specific Recommendation

- Provide periodic training to all health and security staff and program administrators. Regular training for clinic staff who perform TST screening is also important owing to staff turnover.

- Train staff in collaboration with the local public health TB program.

Strengthen Collaboration Between Health Departments and Jails

Close collaboration between jail systems and their corresponding public health departments in TB screening, containment, and assessment activities is integral to effective TB prevention and control in jails and the communities they serve. The study found that increasing the breadth and intensity of collaboration between jails and health departments could significantly strengthen TB control. All of the 20 jail systems surveyed collaborated with their local or state health departments in at least some areas of TB prevention and control, but the scope and effectiveness of collaboration were generally limited.

Increase Collaboration in Major Areas of TB Control

Most jail systems collaborated with their health departments on TB treatment (85%) and contact investigations (80%) but, for most other recommended activities, collaboration was relatively limited. For example, only about half of the jail systems collaborated in screening and diagnosis, TB policies and protocols, and prerelease discharge planning. A minority of jail systems collaborated in staff training (40%), quality assurance/improvement (25%), and TB education for inmates (20%). Areas in which collaboration needs to be strengthened include

- Discharge planning and continuity of care for inmates undergoing treatment;
- Use of TB information systems and program assessment (including quality improvement);
- Development and review of TB policies and protocols;

- Use of environmental controls (e.g., ventilation systems and isolation rooms); and
- Staff training.

Increase the Effectiveness of Collaboration

Sixty-five percent of the jail systems rated their overall collaboration with the health department as effective or highly effective. However, health department respondents generally rated collaboration as less effective in all areas than did jail respondents, with the most dramatic rating difference centering on discharge planning. Within jurisdictions, jails and health departments often differed in their perceptions of the effectiveness of collaboration. In just over one third of the jurisdictions, both parties agreed that overall collaboration was highly effective. Jurisdictions collaborating in more areas of TB control were more likely to rate overall collaboration as effective. Having organizational mechanisms in place was the best predictor for both collaborating in more areas and for more effective overall collaborations.

Specific Recommendations

- Increase formal organizational mechanisms of collaboration, including
  - designating one person at the jail system to be responsible for TB control;
  - designating liaisons from the public health department TB program and from the jail system;
  - arranging for TB program staff to provide on-site services at the jail; and
  - holding periodic management and staff-level meetings.

Dramatically Increase Collaboration on Discharge Planning and Continuity of Care

The study found that discharge planning and continuity of care are among the least effective areas of collaboration—only 15 percent of jurisdictions reported having effective collaboration in these areas. Barriers to effective collaboration included lack of advance notification of release (less than one third of jail medical departments were usually notified in advance of release of inmates with TB disease), lack of coordination by the jail with the health department, and limited health department resources for field follow-up. For inmates undergoing treatment for latent LTBI, there was generally no organized system for continuity of care.

Specific Recommendations

- Consider administrative procedures, such as medical clearance or medical holds, to allow jail medical staff to coordinate postrelease care.
- Provide inmates with a medical discharge card so that continuity-of-care information is available to inmates who are released without notification of the medical staff.
- Visit patients before release from jail by health department TB program staff.
- Set up specific appointments for medical follow-up.
- Develop a coordinated effort for continuity of care for high-risk patients with LTB